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With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

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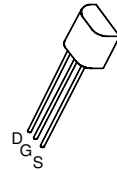
# P-CHANNEL ENHANCEMENT MODE VERTICAL DMOS FET

## ZVP2106A

ISSUE 2 – MARCH 94

### FEATURES

- \* 60 Volt  $V_{DS}$
- \*  $R_{DS(on)}=5\Omega$



E-Line  
TO92 Compatible

### ABSOLUTE MAXIMUM RATINGS.

PARAMETER	SYMBOL	VALUE	UNIT
Drain-Source Voltage	$V_{DS}$	-60	V
Continuous Drain Current at $T_{amb}=25^{\circ}\text{C}$	$I_D$	-280	mA
Pulsed Drain Current	$I_{DM}$	-4	A
Gate Source Voltage	$V_{GS}$	$\pm 20$	V
Power Dissipation at $T_{amb}=25^{\circ}\text{C}$	$P_{tot}$	700	mW
Operating and Storage Temperature Range	$T_j:T_{stg}$	-55 to +150	$^{\circ}\text{C}$

### ELECTRICAL CHARACTERISTICS (at $T_{amb} = 25^{\circ}\text{C}$ unless otherwise stated).

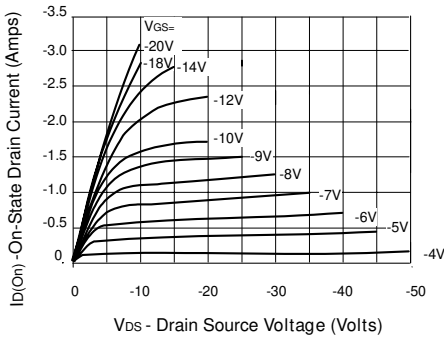
PARAMETER	SYMBOL	MIN.	MAX.	UNIT	CONDITIONS.
Drain-Source Breakdown Voltage	$BV_{DSS}$	-60		V	$I_D=-1\text{mA}$ , $V_{GS}=0\text{V}$
Gate-Source Threshold Voltage	$V_{GS(th)}$	-1.5	-3.5	V	$I_D=-1\text{mA}$ , $V_{DS}=V_{GS}$
Gate-Body Leakage	$I_{GSS}$		20	nA	$V_{GS}=\pm 20\text{V}$ , $V_{DS}=0\text{V}$
Zero Gate Voltage Drain Current	$I_{DSS}$		-0.5 -100	$\mu\text{A}$ $\mu\text{A}$	$V_{DS}=-60\text{V}$ , $V_{GS}=0$ $V_{DS}=-48\text{V}$ , $V_{GS}=0\text{V}$ , $T=125^{\circ}\text{C}(2)$
On-State Drain Current(1)	$I_{D(on)}$	-1		A	$V_{DS}=-18\text{V}$ , $V_{GS}=-10\text{V}$
Static Drain-Source On-State Resistance (1)	$R_{DS(on)}$		5	$\Omega$	$V_{GS}=-10\text{V}$ , $I_D=-500\text{mA}$
Forward Transconductance (1)(2)	$g_{fs}$	150		mS	$V_{DS}=-18\text{V}$ , $I_D=-500\text{mA}$
Input Capacitance (2)	$C_{iss}$		100	pF	$V_{DS}=-18\text{V}$ , $V_{GS}=0\text{V}$ , $f=1\text{MHz}$
Common Source Output Capacitance (2)	$C_{oss}$		60	pF	
Reverse Transfer Capacitance (2)	$C_{rss}$		20	pF	
Turn-On Delay Time (2)(3)	$t_{d(on)}$		7	ns	$V_{DD}\approx-18\text{V}$ , $I_D=-500\text{mA}$
Rise Time (2)(3)	$t_r$		15	ns	
Turn-Off Delay Time (2)(3)	$t_{d(off)}$		12	ns	
Fall Time (2)(3)	$t_f$		15	ns	

(1) Measured under pulsed conditions. Width=300 $\mu\text{s}$ . Duty cycle  $\leq 2\%$

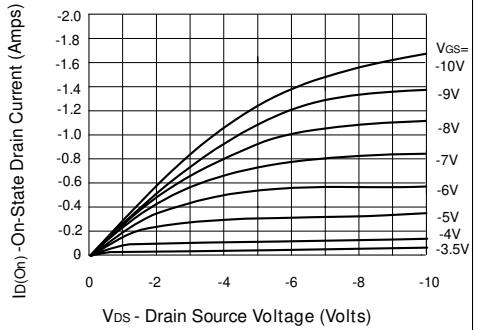
(2) Sample test.

# ZVP2106A

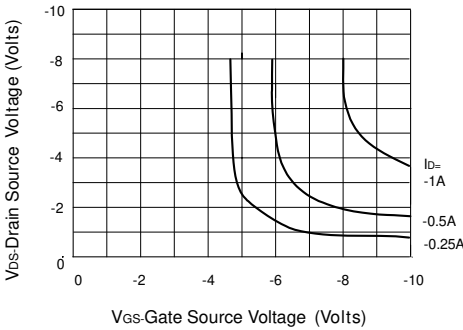
## TYPICAL CHARACTERISTICS



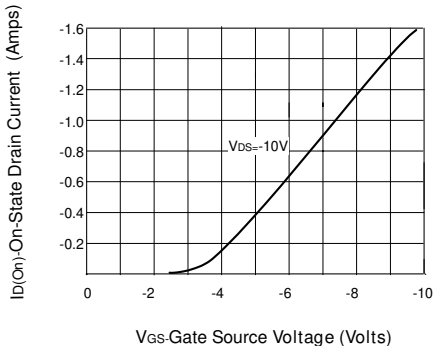
**Output Characteristics**



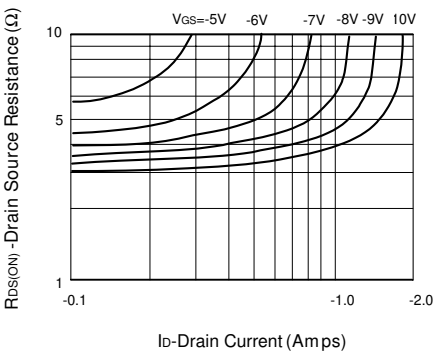
**Saturation Characteristics**



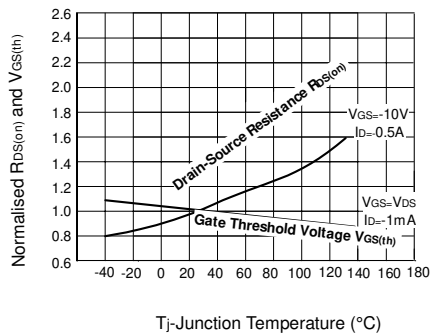
**Voltage Saturation Characteristics**



**Transfer Characteristics**

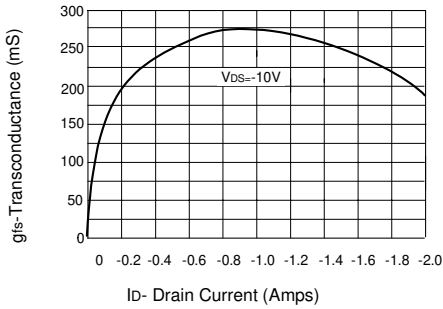


**On-resistance v drain current**

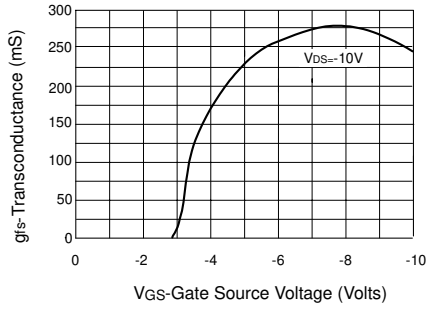


**Normalised  $R_{DS(on)}$  and  $V_{GS(th)}$  vs Temperature**

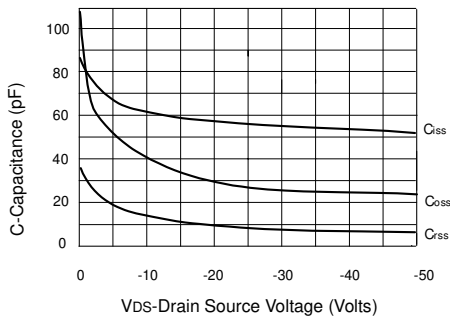
## TYPICAL CHARACTERISTICS



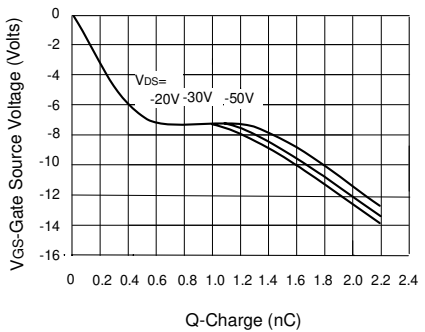
**Transconductance v drain current**



**Transconductance v gate-source voltage**



**Capacitance v drain-source voltage**



**Gate charge v gate-source voltage**